spatial modulation element, and parallax images displayed on said image display means are controlled to switch to those corresponding to circumstances of incidence of a beam into each region.

26. (Unamended) The image observation apparatus according to Claim 25, wherein said spatial modulation element is a transmission type spatial modulation element.

27. (Unamended) The image observation apparatus according to Claim 25, wherein said spatial modulation element is a reflection type spatial modulation element.

28. (Unamended) The image observation apparatus according to either one of Claims 1 to 4 and 14 to 17, wherein said display optical system comprises a prism body having a decentered, rotationally asymmetric, reflective surface with optical powers differing depending upon azimuth angles.

29. (Unamended) An image observation system comprising a pair of image observation apparatus as set forth in either one of Claims 1 to 4 and 14 to 17, for the left and right eyes of the observer.

Remarks

Claims 1-29 are pending in this application. Claims 1, 14, and 15 are the independent claims.

The Abstract of the Disclosure has been amended to address the Examiner's objection. Favorable consideration is requested.

Claim 1 has been amended. Applicants submit that support for the amendments can be found in the original disclosure, and therefore no new matter has been added.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Publication No. 2002/0034016 A1 (Inoguchi, et al.). Applicants respectfully traverse this rejection for the reasons discussed below.

As recited in independent Claim 1, the present invention includes, *inter alia*, the feature of changing a position of an incident beam on an entracnce pupil of an observing eye, wherein a size of the incident beam on the entrance pupil is equal to or smaller than a size of the pupil of the observing eye. Applicants submit that the cited art does not disclose or suggest at least this feature.

Figs. 4 to 17 of Inoguchi, et al. disclose that an illumination light source image is guided and forms an image on an entrance pupil of an observing eye. More specifically, in Figs. 10, 11, and 14-16, it is disclosed that an image made by a surface light source is guided and forms an image on an entrance pupil of the observing eye by using a surface light source. An imaging ability of an eye is necessary to observe the image clearly. That is, it is necessary to superimpose light beams entering from an entrance pupil onto a retina. Accordingly, if such a system is used for stereoscopic vision, contradictions by convergence of both eyes and focus adjustment arise. Since an exit pupil as an optical system has a certain area in this system, there is no need to change a position of an incident beam on an entrance pupil of the observing eye.

Further, in Figs. 4 to 9, 12, 13, and 17, it is disclosed that an image made by a light source recognized as a point light source is guided and forms an image at only a point on an entrance pupil of the observing eye. In this case, it is possible to observe an image clearly independently of an imaging ability of an eye. Also in this case, a size of the incident beam on the entrance pupil is equal to or smaller than a size of the pupil of the observing eye. If, however, the position of the image is off a position of an entrance pupil, it is impossible to observe the image since a light beam does not enter the eye. Accordingly, if this system is used for stereoscopic vision, contradictions by convergence of both eyes and focus adjustment arise. The present invention recited in Claim 1 solves this problem by changing a position of an incident beam on an entrance pupil of the observing eye, wherein a size of the incident beam on the entrance pupil is equal to or smaller than a size of the pupil of the observing eye.

In the Office Action, the Examiner asserts that Inoguchi, et al. discloses that the position of a light beam can be changed by illuminating a certain area at which an LCD is positioned to effect a function of spatial light modulation of the LCD. However, as shown in Fig. 17, since a light source image is focused onto an entrance pupil of an observing eye, even if the other part of the LCD is illuminated by the point light fixed at a certain position, the position of an entrance pupil that a light beam enters cannot be changed.

For the above reasons, Applicants submit that Inoguchi, et al. fails to disclose or suggest at least the above-mentioned features of Claim 1.

Claims 14 and 15 stand rejected under 35 U.S.C. § 103 as being unpatentable over Inoguchi in view of the publication "Final Outcome Reports of Advanced Stereoscopic Motion Picture Communication Project" issued by Telecommunications Advancement Organization of

Japan (the TAOJ document). Applicants respectfully traverse this rejection for the following reasons.

Applicants note the Examiner's request for a copy of the TAOJ document for the file. However, Applicants do not have available an English translation of that document and therefore are unable to provide such at this time.

As recited in independent Claim 14, the present invention includes, among others, the feature that an area of a region in the outermost periphery out of a plurality of regions in a divided exit pupil is greater than the area of the regions except for that in the outermost periphery. Inoguchi, et al. discloses an image display apparatus for observing a virtual image to provide light beams from an exit pupil of an optical system. However, that patent fails to disclose or suggest that the apparatus is constructed to spatially divide an exit pupil of the display optical system into a plurality of regions.

The TAOJ document discloses providing a pluarlity of parallax images to divide an exit pupil for stereoscopic vision. As described in that document, in order to observe images in a super multi-view vision, parallax images are simultaneously provided by dividing an exit pupil of the display optical system into a plurality of regions. That is, in the case that a super multi-view vision is achieved by only one apparatus, an image has to be divided into a plurality of time division images and those time division images are provided from a plurality of exit pupils. However, the speed ability to display time division images has a limit. That area that an observer can observe becomes narrow because the number of the plurality of divided regions increases. The present invention solves this problem by providing an image obseration apparatus characterized in that an area of a region in the outermost periphery out of the plurality of regions

in the divided exit pupil is greater than those of the regions except for that in the outermost periphery.

Regarding Claim 15, as recited in that claim the present invention includes, *inter alia*, the features that a size of the exit pupil of a display optical system is larger than a size of the entrance pupil of the observing eye and a size of a beam from the image display means at the position of the entrance pupil of the observing eye is substantially equal to or smaller than the size of the entrance pupil of the observing eye, and changing a position of the beam from the image display means at the position of the entrance pupil of the observing eye. The TAOJ document also fails to disclose or suggest these features.

Accordingly, Applicants submit that even of the teachings of the TAOJ document could properly be combined with those of Inoguchi, et al., the combination still would not disclose or suggest at least the above-mentioned features of Claims 14 and 15.

The other art of record does not remedy the above-mentioned deficiencies.

For the foregoing reasons, Applicants submit that Claims 1, 14, and 15 are patentable over the art of record. The dependent claims are believed to be allowable for the same reasons, as well as for the additional features that they recite.

For the foregoing reasons, Applicants submits that this application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-mentioned Office Action, and an early Notice of Allowance are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our below-listed address.

Respectfully submitted,

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VERSION WITH MARKINGS SHOWING CHANGES MADE TO CLAIMS

1. (Amended) An image observation apparatus for observing image information, comprising:

image display means for displaying image information;

a display optical system for projecting the image information displayed on the image display means, onto a retina of an observing eye; and

incident beam control means for changing a position of an incident beam on an entrance pupil of the observing eye,

wherein a size of the incident beam on the entrance pupil is equal to or smaller than a size of the entrance pupil of the observing eye.

VERSION WITH MARKINGS SHOWING CHANGES MADE TO THE ABSTRACT

An image observation apparatus is constructed to project image information displayed on an image display device for displaying the image information, onto a retina of an observing eye by a display optical system, thereby permitting an observer to observe the image information, and to perform control to change a position of an incident beam onto the entrance pupil plane of the observing eye. The apparatus is arranged to detect the position of the observer's pupil and change the position of the incident beam [onto] on the entrance pupil plane of the observing eye, based on the result of the detection. [The image display device is configured to display a plurality of parallax images, the position of the exit pupil of the display optical system is substantially aligned with the position of the entrance pupil of the observing eye, the exit pupil of the display optical system is spatially divided into a plurality of regions, parallax images corresponding to the respective regions are incident on the observing eye, and a plurality of parallax images are injected into the single eye of the observer. An area of a region in the outermost periphery out of the plurality of regions in the divided exit pupil is set greater than those of the regions except for that in the outermost periphery].